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ABSTRACT

This report describes the NCHEMS model which consists of a Program Classification Structure (PCS), a student flow model, and a resource requirements prediction model; these data are all used in the construction of program budgets and long range management plans. The model is reviewed in its application to the college environment. The roles of academic administrators and faculty members in the implementation of the model are discussed. Recommendations for the use of the model in university funding programs are made. (BRB)

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MANAGEMENT SYSTEMS AND BUDGETING METHODOLOGY: DO THEY MEET THE NEEDS AND WILL THEY WORK?

By Peggy Heim

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IN RECENT YEARS much attention has been given in higher education to the development of Management Information Systems (MIS) and budgeting methodologies, particularly Programming, Planning, and Budgeting (PPB). Much money has been spent on developmental programs. Perhaps the most notable program, at least for the magnitude of the effort, its involvement of others, and its publicity, is what might be called the NCHEMS model, a product of the WICHE organization.

The NCHEMS model consists, among other things, of a Program-Classification Structure (PCS), a student flow model (based upon an Induced Course-Load Matrix), and a resource requirements prediction model. These, along with other data and building blocks, are used in the construction of program budgets and long range plans. The system was described succinctly by Dr. Ben Lawrence in the August issue of *Studies in Management*. My own comments will be directed to the NCHEMS model, though many of them are applicable to any similar construct. I shall also deal primarily with the academic area, not because other areas are free of these problems, but because it is necessary to limit my discussion.

The NCHEMS Management System has been heralded as a tool to improve decision-making, and much is expected of it. On this let us be clear. Its advantages have been stated not just by those employed in its development but by many viewing it from some favorable side-line vantage point. I have been among them. But on closer look I suspect that those involved directly and indirectly in its development, like corporate product managers, may have been taken in by our own enthusiasm. We have done some market research in market needs and wants, but we have given insufficient attention to ways in which the college may want to apply it and to organizational environments in which the product must be used. We may have brought forth a tool designed for a flexible hand with an opposable thumb. But the organizations for which it is intended have only a paw.

Internal Decision-Making

Is it adapted for its environment and its tasks? There is question whether in the absence of related developments the NCHEMS Management System, or indeed any similar system, is well adapted as an internal decision-making aid for college environments and uses and whether it will likely lead to a significant improvement in internal decisions. We will examine some of these reasons.

Planning-Management systems are based on two premises: 1) that appropriate and workable models can be developed to predict behavior; and 2) that realistic assumptions can be fed into the models, or alternately, that deficiencies in the assumptions will not matter significantly. I, for one, am not certain the assumptions incorporated into models will be that realistic. We are bringing forth a technology which seems best adapted to relatively static conditions, but what we actually face is a period of significant economic and social change. Major variables are rapidly changing—prices for the items colleges buy, wages and salaries, working conditions (we have only begun to consider the implications of unionization), modes of instruction, course patterns (including the new "non-major"), and off-campus study, to name a few. Results will be no better than the model itself. Even the more complex models and systems may yield disappointing results. This occurs because formalized models lack flexibility and versatility. These elements are more likely to be found in ad hoc situation analysis, skillfully made.

The NCHEMS System, if implemented in large part, requires supplementary staff. Moreover, in real life, data usually do not come in appropriately adjusted form. Data preparation often requires insight, imagination, and sometimes second vision. The system cannot be run with only high-grade clericals or a faculty member put out to pasture. The operation requires the skills of a combination economist, accountant, statistician, management specialist, sociologist, psychologist, and clairvoyant. The director of the

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system needs to know much about college administration in general and the ins and outs and idiosyncrasies of his own institution, including the idiosyncrasies of the people who will use the data and with whom the data will be used. Above all, he must be acceptable to academic administrators and faculty. (In view of the whims, fancies, and predispositions of many faculty and academic administrators, this is no easy requirement to meet.) In addition, he must be able to organize his operation, train staff, and get things done. This cannot be accomplished unless the operation has the support needed. In a large college one cannot produce much output if the planner also has to pirate clerical, statistical, and computer assistance as best he can or do most of it himself. But even if all these things fall into place, what then will the institution have?

The NCHEMS System is better adapted to broad-brush resource planning than to many other types of assignments. In this respect the system may be more appropriate to the expanding public institution and to state coordinating or planning agencies than to the slow-growth single purpose institution, namely the private college.

With respect to the costs of specific programs, the NCHEMS System, and indeed any general management system, deals with average, rather than marginal, inputs and costs. Averages are rough approximators. For example, it is often possible to increase enrollment with little incremental cost. It depends where it falls and the individuals with whom the administrators have to deal. It is also true that there is a lumpiness of costs. At some point increasing enrollments involve a chunk of additional input and costs, such as new labs and additional faculty. These considerations are difficult to incorporate into a budgeting model. There is no substitute for old fashioned pad-and-pencil budgeting. The new systems will give us a better idea of the size and condition of the forest, but we must still pay attention to the individual trees.

One important problem confronting colleges and universities is cost projection for new programs and modification of old. I hypothesize that in the past we have not used appropriately the analytical studies that we were capable of making. And now we are developing even more sophisticated analytical and budgeting tools. The main problem seems to be that academicians practice what might be called ivy-halled personal-factor administration, as distinct from what might be termed rationalistic resource-allocation administration. It may be that management systems will make their real contribution by conditioning the behavior of decision-makers. They would incorporate rationalistic resource-allocation approaches, focus on programs, plan ahead, and include both long and short-run considerations.

Let us now consider the application of management systems in the complex social organization of the college and university environment.

Application of PMS in the College Environment

There are various requisites for the successful use in colleges and universities of management information systems and programming, planning, and budgeting.* I shall mention some here, for they relate to the discussion.

(1) A favorable predisposition to their use. Unless there is a strong belief that management systems will make a positive contribution and that this contribution is needed, management systems will remain an unrewarding exercise.

(2) A thought pattern that will run in quantitative channels. With some individuals this change will be difficult to achieve.

(3) Development of understandings and skills in the use of management systems. If they have not been thinking in planning terms, decision makers need knowledge—what management systems can do, what they cannot do, and how to use them.

(4) Decision-making through policy analysis. Academic administrators and faculty committees are too often moved by temporarily attractive ideas and short-range reactions. Indeed, they may even make decisions through emotion and, sometimes, fancy. The academic culture has not called for solid analysis in its own decision-making. What is needed is a radical change in the culture. And our organizations and agencies have given far too little attention to the changes that are needed and the ways to achieve them. For example, while AAUP has pushed hard for faculty governance, it has not considered how committees and faculties should function if they are to be effective instruments for institutional viability.

(5) Application throughout the institution. If management and planning systems are to make a major impact in improving institutional decisions, the president must be an ardent follower of the approach and must secure its application throughout the institution—in the development office, the public relations office, student services, auxiliary enterprises, the business office, and buildings and grounds to name a few. Politically these systems cannot be used effectively if only a Dean or Provost tries to institute the rigors of PPB. The faculty will buy neither the approach nor its results. If nothing else, they will subtlely undermine it.

(6) A willingness to come to grips with painful decisions. Any hard decision is painful. It means bestowing resources or boons on one; denying them to another. If decisions should be made, resort to personal considerations, as distinct from management systems, is likely to be easier—it can help reduce the flak and the pain. But too often decisions are not made. The institution drifts. Or decisions come too late.

(7) The proper distribution of responsibility, theoretical authority, and practical power. This brings us to the

* The concept and term *PPB* is rapidly becoming obsolete. The new buzz word may be *policy analysis.*

important consideration—are management systems appropriate to the organization structure and practice in effect in colleges today? Or may their likely benefits be overstated?

The introduction of management systems would be one thing in the classical organization pattern (the pyramid) where authority is concentrated at the top and delegated, along with responsibilities, to lower levels of administration, and where job retention and salaries depend upon job performance. Even here there is a personal selling job to do when management systems are introduced. Anything which disturbs the status quo is likely to be seen as a threat by various individuals in the organization, and dysfunctions impair organizational effectiveness.

Decision-making under Participative Administration

The job of securing the use of management systems in decision-making is bigger in colleges and universities than in the past. In the early 1960's most colleges operated on the basis of consultation and consensus though much of the final decision-making authority in both theory and practice rested with the President. He was, of course, responsible to the Board of Trustees. In the academic area consultation and concensus evolved, or more accurately eroded, into participative administration. If faculty had these privileges, others understandably wanted into the act. Particularly students. The composition of governance committees expanded. Also their scope. The boundaries as to what questions might be considered began melting away—indeed, in most cases they were not clear at the start. It is to be noted that while the power of governance committees is usually limited in theory of that of "recommend," it is not easy for a Provost or President to override recommendations. Unless reminded periodically that they function in a consultative role, governance committees will come to think that they have, in effect, final power. The administrative situation will then be even more difficult than now.

What really exists in large part is administration by committees. But the committee members are not responsible to the Board. Their jobs do not depend on how well they make decisions. You may have seen the phenomenon operating on your own campus. When faculty or students flub it, they may become aggressive, or resign from the committee on pretext of "too much work." The repair job falls on others.

The situation which exists in many colleges, and into which others are drifting, shapes up somewhat as follows.

(1) Practical power resides in individuals who do not have commensurate responsibility.

(2) Even if these "committee administrators" are supposed to view the institution in its totality, they lack the time, and often the aptitude, to be deeply involved. They have other functions to perform. And they are more likely to be interested in their own particular and immediate concerns, rather than in long-run college concerns.

(3) It is a fact of administrative life, particularly in less well planned institutions, that we deal with the problems that happen to be current—whatever comes to a boil on the stove. A large part of administrative and committee time is consumed by short-run crises. Much of the remainder is taken up by personal interests and fancies. What time is left goes to long-run problems and planning. But not much time is left. It should be noted that MIS and PPB Systems are not designed to help solve immediate trivialities and short-run crises. Yet this is where much administrative and committee time is spent.

(4) The effective use of management systems to improve decision-making requires considerable sophistication and discipline. But in practice many academic administrators have been neither converted nor trained to the new technology.

(5) Management systems function contrary to faculty culture. Yet faculty, and to a lesser extent students, play a major role under the concept of participative administration. In their role as faculty, they traditionally spend much time in the deliberative process. They often become diverted by issues which, though strongly felt, lack decisive long-range institutional significance. Faculty culture stresses the referral of questions to committees. These committees must be elected, not appointed. Election to a committee may bear little relationship to the faculty member's training and special competency. Moreover, the composition of the committee changes periodically. And we believe we are going to teach and induce governance committees to focus attention on problems of major long-range importance to the institution in contrast to those which seem personally important to individuals, to organize their committees for effective functioning, and use complex management and budgetary systems. And then we must still sell the results to the general faculty, not to mention students. I fear we are dreaming.

The Wrong Horse or the Wrong Race?

This raises the question whether the wrong horse has been entered or whether we are running in the wrong race. Is the real problem the lack of management data and planning know-how? Or do we fail to use appropriately what might be available now? Perhaps the basic administrative problem in institutions today lies with organization theory, practice, and expertise. Is the rest secondary?

I suspect the real situation is one in which to win at all, we must enter and win a dual race—PMS and organization theory, practice, and expertise. PMS is really a rationalistic way of looking at resource-allocation. The same approach could also be achieved with simpler data and analytical forms. But while the rationalistic approach could be implemented with less complex forms, institutions have ordinarily not done so to any great extent. (There are exceptions.) Simpler forms lack that special something. Appeal may be needed to help market the rationalistic approach, for we must overcome traditional academic culture. Perhaps

what we have really purchased, besides a system, are indispensable selling qualities.

Higher education should also tackle the basic problem—organization theory, practice, and expertise in its totality. But I question whether this will occur, at least soon enough. Meanwhile, what might management systems and budgeting methodology offer? It may help administrators make long-run decisions that are more realistic financially. Perhaps they can then lead their faculties appropriately. Under the urgency of financial hardships the aura surrounding management systems may help instill in faculty new attitudes towards and approaches to decision-making. The data may make more acceptable what would otherwise be very unpopular policies, e.g. constraints on the percentage tenured, increases in teaching loads, and a reexamination of instructional modes. They may also help reduce pressures on administrators, as for example, demands for more faculty in given departments. It should be noted that many of these decisions could be made as effectively with selective analytical studies. The main contribution management systems and PPB may well make is to sell rationalistic resource allocations.

And Now the Prognostication

The movement towards Management Information Systems will be accelerated whether institutions desire it or not. Government agencies, including the federal government and state coordinating councils, will be requiring data in what will probably be the NCHEMS form, or some variation thereof. May I point out that the U. S. Office of Education has not poured large sums into the NCHEMS project merely for the internal benefit of the institutions of higher education. Agencies desire data. The new federal legislation will reinforce data-gathering efforts. It is only natural that HEGIS reports, or their successor, will be used indirectly, if not directly, in the administration of the funding program. The institution which wants funds will have to submit supporting data. And I conclude my remarks with this caveat. The institutional costs of compliance with data requests could become considerable.

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